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State regulators clarify tasks for EPRI oversight work

Report details research contracting areas needing scrutiny

Dan Utroska
Associate Editor

WASHINGTON, D.C.—Regulatory scrutiny of the research contracting procedures employed by the Electric Power Research Institute (EPRI) is moving forward with deliberate but measurable pace.

A National Association of Regulatory Utility Commissioners (NARUC) resolution in late July has specifically empowered a specially-formed oversight committee to investigate research priorities and procedures at EPRI. The oversight committee was formed last February by another NARUC resolution and was charged with the general responsibility of monitoring and critiquing EPRI research contracting practices.

In addition, a current report issued by a NARUC staff subcommittee details specific areas where EPRI research contracting methods could be improved. The report highlights special points of interest for the oversight committee's attention.

Report has mixed findings

While the NARUC staff subcommittee report found that EPRI's research contracting procedures were "generally acceptable," and further, that the institute's strategic planning provided "a reasonable framework for the selection of individual research projects," it criticized the high percentage of contract awards made without competitive bidding.

The NARUC staff subcommittee report also questioned what it saw as a disproportionately high number of California contractors. EPRI headquarters is based in Palo Alto.

"The fact that 72 percent of EPRI's 1983 contracts, constituting 52 percent of the total contract expenditures, were awarded on a sole source basis, suggests that a greater effort could be made in opening the contracting system to more prospective researchers," the NARUC staff subcommittee report reads.

"Sole source" proposals are a type of noncompetitive means for soliciting research contracts when allegedly there is no real question over contractor identification for specific projects. EPRI's criteria for sole source projects state that explicit justification must be provided for projects that cost more than $200,000.

The NARUC staff subcommittee reviewed 18 recently completed projects. Of the 18, 13 were sole source contracts, and 10 of the 13 were initially contracted at a cost below the $200,000 threshold, thus eliminating the need for sole source justification.

Of the 10 sole source research contracts that initially were below the $200,000 threshold and therefore not subject to sole source justification, four projects had contract amendments that resulted in final costs substantially greater than $200,000.

"This might be interpreted as an effort to circumvent the competitive process in choosing vendors," the staff subcommittee report reads. "Further, initial sole source contracts may contain unrealistic cost estimates or commitments to deliver if future expansion of the contract is anticipated by the vendor. It suggests, at least, that more care should be exercised in making the initial contract award and in choosing a vendor for expanded follow-on research."

In light of these findings, the

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Montana commission votes to disallow cost of Colstrip-3

HELENA, MT—Disallowing the full cost of the 700 MW coal-fired Colstrip Unit 3, the Montana Public Service Commission (MPSC) has voted to allow Montana Power only $4 million of a $96.4 million rate increase request.

Approximately $60 million of the request was for the cost of Colstrip 3. The utility had asked for a 16.7 percent rate of return and was granted a 11.7 percent return.

Earlier in the summer, the utility, which owns 30 percent each of units 3 and 4, announced it was delaying construction of the 95 percent complete unit 4 until Spring of 1986.

In disallowing Colstrip 3, MPSC Commissioner Howard L. Ellis told *EL&P* that the commission used the Montana "used and useful law" in deciding the unit would not be needed.

Ellis said the commission looked at Montana's firm load and projected the utility would have ample reserves well into 1993.

Short-sighted view

Montana Power spokesman Jim Schwartz vehemently disagreed, saying the MPSC is "taking a very short-sighted view of the situation."

Schwartz said the utility presently can use all of the power generated by unit 3 and some of the electricity to be generated by Colstrip-4 when it goes on-line.

He said the utility will file a reconsideration request with the commission. If that fails, Schwartz suggested the utility might take the matter to the state supreme court.

Other options for the utility, include selling its percentage of the units or selling the power. As of now, Schwartz said, Montana Power has no potential buyer for its share of the units. However, he said there are some utilities in the area that have plans to add generating capacity.

"The commission seems to be deregulating the power from Colstrip-3," said Schwartz. He explained that the utility feels it has gotten an OK to go out and get the highest price for selling the power to outside sources.

The utility spokesman admitted that the situation could still work to the utility's advantage if it can find buyers for the electricity. Schwartz said most of the potential buyers are in the Pacific Northwest where planned nuclear plants have been cancelled.

Cash flow problem

In the meantime, the utility finds itself with a serious cash-flow problem. Schwartz said Montana Power is scrutinizing costs and looking at the possibility of cutting travel, construction, and other business expenses. He said no lay-offs are planned.

MPSC Commissioner Ellis admitted the decision to keep Colstrip out of the rate base puts the cash flow of the utility in a "desparate position."

Ellis said the decision also "hangs Colstrip-4 out as a hazard to the company."

Other owners of the plant include; Puget Sound Power & Light, Portland General Electric, Pacific Power & Light and Washington Water Power Company.

Cogeneration: Is the trend upward?

The Great Western Malting Company's cogeneration facility, located at Vancouver, Washington, supplies heat to roast malted barley while generating enough electricity to heat and light 8,000 homes. The Clark County Public Utility District purchases the electricity from the General Electric LM 2500 facility. Although there is much present optimism about the future of cogeneration through the year 2000, there is not much of a data base from which to project subsequent growth. A special feature for generation readers appears on page 19.

NARUC recommends utilities bring EEI audit to rate cases

Some regulators call NARUC resolution a 'victory'; measure may end probe of Edison Electric Insitute expenditures

WASHINGTON, D.C.—Electric utilities will have to present a current, independent audit of Edison Electric Institute (EEI) activities and expenditures in future rate cases, if a recommendation by the National Association of Regulatory Utility Commissioners is adopted by state regulatory commissioners.

In announcing its recommendation, NARUC encouraged its member commissions across the country to disallow all rate treatment of utility contributions to EEI if a reporting system has not been agreed upon by September 30, 1984, or if an operational audit by an acceptable firm had not been completed by March 31, 1985, 90 days after the close of EEI's fiscal year.

EEI has said that it will meet the September 30 deadline, and at press time Price Waterhouse—the firm

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Foreign Power Briefs

• **Cuban Prime Minister Fidel Castro** announced plans for his country's first nuclear power plant during a speech delivered in late July. Castro said the plant is being built with Soviet aid and would be located at Cienfuegos, 150 miles southeast of Havana. The prime minister said it will have four, 417 MW reactors built to withstand earthquakes, tidal waves and a jet crash. Castro said the plant is being built with 5,500 Cuban workers, 188 Soviet advisors and 82 Bulgarian volunteers. A completion date for the plant was not announced.

• **China's Ministry of Coal Industry** has contracted Ebasco Services Inc. to develop a coal/water slurry pilot demonstration plant in Peking. According to the $1-million contract, Ebasco will provide engineering and support services for the project. Targeted for completion in Fall 1985, the project will determine the technical and economic feasibility of slurrying Chinese coals.

• **The Japanese government** said it has approved a plan that would authorize construction of 67.7 million kilowatts of generating capacity over the next ten years. A Natural Resources and Energy Agency spokesman said the construction program would include 27 nuclear plants, with a total capacity of 26.5 million kilowatts. The spokesman said the plan reflects Japan's desire to reduce its dependence on foreign oil.

• **Ontario Hydro** reports that electricity exports to the United States increased 8.6 percent in June. The utility sold approximately 926.9 million killowatthours of electricity to U.S. utilities in June, compared with 853.4 million kilowatthours sold in June 1983. The utility said the power exports earned its customers almost $16.2 million in June. In the first six months of the year, Ontario Hydro said income from its power sales to the U.S. totaled more than $87 million.

• **Kyushu Electric Company of Japan's** Genkai-2 nuclear plant set a world record 415 days of continuous operation in July before shutting down. The previous record was 400 days, held by Fukushima I-2. Northeast Utilities' Connecticut Yankee nuclear plant then broke the mark in July, hitting 417 days of continuous operation. Northeast Utilities Chairman and Chief Executive Officer William Ellis sent a telegram to Kyushu Electric President Tatuo Kawai saying, "What a proud time for the nuclear industry when two reactors on opposite sides of the globe can each surpass 400 days of continuous operation."

• **Ferre Development Inc. of San Juan, Puerto Rico** and Combustion Engineering have formed Caribe Energy Services Incorporated. The joint venture will serve Caribbean electric utilities and industrial steam users in planning and executing new projects, providing maintenance services and upgrading units. Caribe will provide all the services previously offered by Combustion Engineering Americas Inc.

• **Ube Wormser Ltd.,** a new joint venture based in Tokyo, has been formed to produce and market its fluidized bed combustor for clean utilization of low-grade coals. The partners in the new company are Massachusetts-based Wormser Engineering and two large Japanese industrial firms, Ube Industries and Marubeni Corporation. Wormser said the venture will be responsible for the marketing, design and construction of the Wormser Grate fluidized bed combustor in Japan, southeast Asia and Oceania. The initial Japanese installation will be a 65,000 pound-per-hour unit installed in a plastics plant in Ube City.

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Transmission ties between neighboring utilities are adding a new dimension to integrated electric utility system operations. 15

Cogeneration is being touted as a new success story in the wake of federal legislation aimed at stimulating the technology. But some analysts are challenging the validity of that report. **G** 19

Complaints by nuclear project construction workers are being encouraged by Detroit Edison, so they don't grow into last-minute allegations. **G** 22

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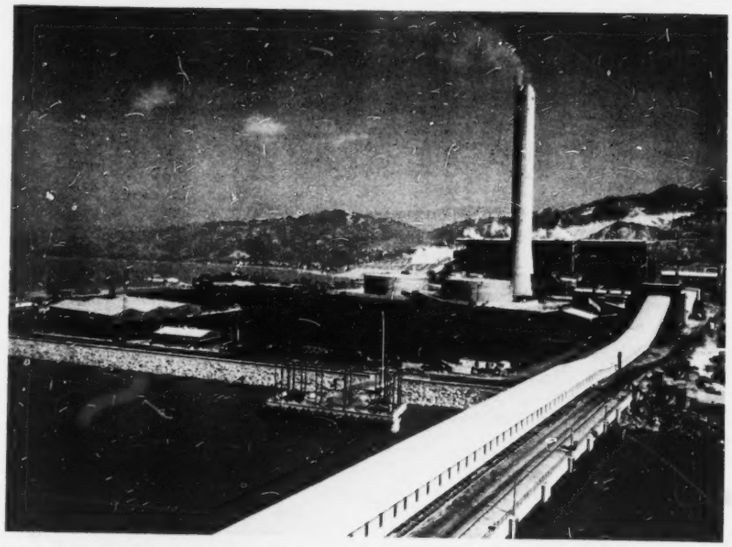

Hong Kong's Castle Peak coal-fired project, $23-million in Hong Kong dollars, is the largest single order placed in Britain for power generation equipment. Castle Peak-A station, shown here, is expected to be operating at full capacity by the end of the year when the fourth 350 MW unit goes on-line. Construction is underway on Castle Peak-B, which will have four more units coming on-line between 1986 and 1989.

NARUC recommends . . . from page 1

that prepares EEI's audited annual financial statement—was being broadcast as the company to prepare the operational audit.

An operational audit, which reportedly is different from a conventional financial audit, seeks to formally trace both the activities and expenditures of each department within EEI.

Recommendation may end probe

The late July NARUC recommendation is the result of an ongoing probe of EEI expenditures by state regulators. The required audit is to be conducted during the preceding year by an independent group, showing "all direct and indirect contributions to and through EEI from all sources," and additionally, showing "all expenditures by program and by a system of accounts."

During the past year, NARUC's staff subcommittee on accounts has been sending inquiries to EEI in an effort to determine how the institute spends its money. The investigation has been aimed at trying to develop generic guidelines to help state commissions discriminate in rate cases between those EEI expenditures that are in the interest of electricity consumers, and therefore should legitimately be borne by ratepayers, and those that are strictly in the interest of utility shareholders, and therefore should not be passed along through rates.

NARUC has been interested particularly in identifying expenditures for lobbying and regulatory advocacy, including the cost of preparation of materials and persons for these activities (see *EL&P*, February 1984, page 1 and April 1984, page 1).

Also of special interest to NARUC is EEI's advertising expenditures, especially funds used for promoting electricity load growth and for "good will."

During its nearly two-year investigation of EEI expenditures, NARUC regularly has complained that the institute has been less than cooperative in responding to NARUC interrogatories. In fact, as part of its explanation for deciding to require each utility to present an EEI audit in rate cases, NARUC said its staff subcommittee on accounts had not been able, from information supplied by EEI, to determine aggregate amounts annually spent by the institute on advertising, lobbying, and regulatory advocacy.

The NARUC resolution—which likely will result in state commissioners getting an audit of EEI operations and expenses, but not generic guidelines concerning which expenses ought to be allowed—"grew out of a healthy state of frustration," says Michael Foley, NARUC's Director of Financial Analysis.

The frustration was caused by the fact that the NARUC probe of EEI expenditures primarily took place through the mails, as NARUC sent lists of questions and EEI mailed back its responses.

"In a sense, we were at their mercy on this," Foley laments, adding that EEI's responses were "insufficient, contradictory" and in some instances "bordered on falsehood."

"It became clear that we were going to have to take a more aggressive approach," he said, and the resolution reportedly embodies this.

"The resolution represents a victory for those who were pushing for a vigorous, professional effort" on the part of regulators, Foley added.

Asked to comment on the resolution, an EEI spokesman offered a short, formal statement. "EEI has and will continue to cooperate fully with NARUC in developing and implementing a system of reporting on EEI activities which will aid regulators in considering treatment of dues paid to EEI in rate proceedings.

"We believe," the statement added, "that the NARUC resolution approved July 26 provides for development of a method which will meet both the legitimate needs of regulators for information and EEI's needs for clear, mutually-agreed upon definitions on which to provide accounting."

Addressing the quality of EEI's upcoming audit report, NARUC's Foley said, "They can do an awful lot to put this [controversy] behind them, but if the report is insufficient, this will boil up all over again."

As part of its decision to recommend that electric utilities be required to secure EEI audits for presentation at rate cases, NARUC asked that EEI join with it in selecting an auditor acceptable to the insti-

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Meeting more than summer peak demand

Interconnections provide new operating economies, as well as backup during emergency, peak periods

Robert A. Lincicome
EL&P Editor-in-Chief

BARRINGTON, IL—Transmission ties with neighboring utilities and interconnections between regional pools and coordination councils are adding a new dimension to integrated electric utility system operations. In addition to providing bulk power backup during peak demand periods and emergencies, transmission interconnections are allowing more and more utilities dependent on expensive oil and natural gas as boiler fuel to turn to neighboring utilities with over-abundant coal-fired and nuclear capacity to meet their base-load customer electricity requirements. The result: economic benefits for all.

Since load growth has been lower than anticipated at the time generating system expansion programs were drafted back in the 1970s, many utilities...and all regional coordinating councils...currently are experiencing high generation reserve margins. For those with abundant coal-fired and nuclear capacity, transmission interconnections...both intra- and interregional...offer the opportunity of selling the output of at least some of the excess capacity and increasing revenues. For utilities with expensive oil- and gas-fired generating capacity, transmission interconnections provide a source of lower cost electricity, thereby reducing operating costs and the price of electricity delivered to customers.

But nothing ever is totally free and the benefits of more economic operations must be counterbalanced against the potential adverse effect of lack of transmission system operational flexibility. If interconnections, between neighboring utilities and between regions, are operated close to or at their maximum loading levels for a greater portion of the time...as many are currently according to the North American Electric Reliability Council, their ability to withstand and operate under unusual contingencies is reduced.

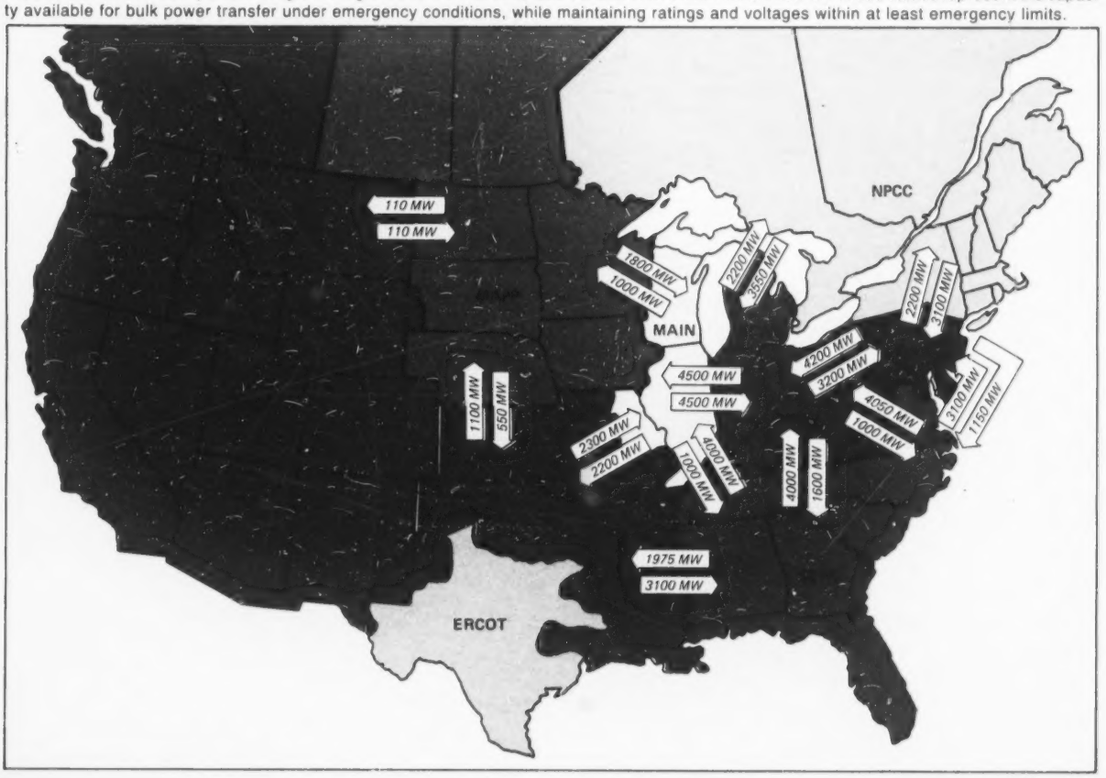
In other words, although the use of transmission interconnections to meet base-load requirements can lead to reduced costs of electricity for consumers, the risk of service interruptions to those customers is increased.

NERC reports that transmission lines into and within certain areas that are heavily dependent on oil- and gas-fired generation are being operated at or near their maximum reliable loading levels most of the time. Such limitations are being reached often within NPCC, MAAC, the Florida subregion of SERC and WSCC. In WSCC, transmission limitations between the Pacific Northwest and California, between the Rocky Mountain systems and the Arizona-New Mexico power areas and between the Arizona-New Mexico area and the California-Nevada area restrict potential transfer of cheaper hydro and other non-oil-based electricity.

The threat to system reliability is greatest at times of peak demand ...which for most American utilities means the months of June, July and August.

REGIONAL RELIABILITY COUNCILS		
ECAR	**East Central Area Reliability Coordination Agreement**, serving all or parts of the states of Michigan, Indiana, Kentucky, Ohio, Pennsylvania, Maryland and Tennessee.	19 member systems
ERCOT	**Electric Reliability Council of Texas**, serving utilities within the state of Texas only.	86 member systems
MAAC	**Mid-Atlantic Area Council**, serving all of Delaware and D.C. and major parts of Pennsylvania, New Jersey, Maryland and a small portion of Virginia.	11 member systems and 5 associates
MAIN	**Mid-America Interpool Network**, serving all of Illinois, the eastern third of Missouri, the eastern two-thirds of Wisconsin and most of the upper peninsula of Michigan.	12 member systems and 2 associate groups
MAPP	**Mid-Continent Area Power Pool**, serving all of the states of Iowa, Minnesota, Nebraska and North Dakota, portions of Illinois, Michigan, Montana, South Dakota and Wisconsin, and the Canadian provinces of Manitoba and Saskatchewan.	46 member systems and 19 associates
NPCC	**Northeast Power Coordinating Council**, serving all of Connecticut, Maine, Massachusetts, New Hampshire, New York, Rhode Island, Vermont and the Canadian provinces of New Brunswick, Ontario and Quebec.	21 member systems
SERC	**Southeastern Electric Reliability Council**, serving all of Alabama, Florida, Georgia, North Carolina, South Carolina and Tennessee, and parts of Kentucky, Mississippi and Virginia.	27 member systems
SPP	**Southwest Power Pool**, serving all of the states of Arkansas, Louisiana and Kansas, and portions of Mississippi, Missouri, New Mexico and Texas.	38 member systems
WSCC	**Western States Coordinating Council**, serving Arizona, California, Colorado, Idaho, Nevada, Oregon, Washington and Wyoming, and parts of Montana, New Mexico, South Dakota and Texas in the U.S. and Alberta and British Columbia in Canada.	48 member systems and 14 affiliates

Map shows inter-regional bulk power transfer capabilities. Arrows indicate the value and direction of incremental non-simultaneous transfer capabilities from reliability-council region to region, after normal base load transfers have been accounted for. These values represent the capacity available for bulk power transfer under emergency conditions, while maintaining ratings and voltages within at least emergency limits.



'84 Summer peaks no threat

As humid summer temperatures oozed across much of the U.S. in early-August, utility leaders expressed confidence that summer peak demands would impose no major threat to reliable electric service.

Conversations with representatives and staff members of regional coordination councils indicated that there was little concern over utilities' abilities to meet prospective 1984 peak demands. Barring an extremely broad, late severe heat storm and major operating problems with prime base load stations, high regional reserve margins and strong transmission networks promise continued uninterrupted service.

Representatives of regional coordinating councils were careful to point out that last summer's peak demand in many areas was heavily influenced by unusually hot weather atop the healthy economic recovery. While industrial activity still continues at a high level this year, temperatures through mid-August were generally less severe than during the summer of 1983 and only minor local difficulties have been reported.

Summer margin of 31%

U.S. generating capacity available

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Power pooling . . . from page 15

for service at the beginning of the summer stood at about 557,100 MW, with a reserve margin of about 36 percent. To this has been added some 6500-MW of new capacity, plus the return of units that had been down for maintenance, bringing total generating capacity to 575,834 MW to meet the estimated non-coincident summer peak demand of 439,104 MW. This provides a national reserve margin of 31 percent. The range of margins for regional coordination councils runs from a low of 21.6 percent for the MAIN utilities to a high of 37.8 percent for the WSCC.

In addition, as mentioned above, transmission interconnections add a further safety margin, even if their ability to withstand contingencies may be reduced to some degree by base-load transfers.

The U.S. continues to be broken into three essentially independent networks. The eastern one-third of the nation, including the seven (of nine) regional coordination councils operating in the states east of the Rocky Mountains, except Texas, are well interconnected with networks of EHV and UHV transmission systems and operate on a totally coordinated basis. Western utilities, represented by the Western States Coordinating Council (WSCC), operate on a parallel basis with the east but maintain only weak ties to the east. The majority of Texas utilities, represented by the Electric Reliability Council of Texas (ERCOT), continue to operate independent of the rest of the nation, with only normally-open emergency ties across statelines.

Following is a summary of regional projections for the summer of 1984:

ECAR Projected '84 summer peak was below that of 1983 and the reserve margin was expected to be about 29.5 percent. Simulation studies of heavy power transfers into and through various parts of the area support the regional council's conclusions of power supply adequacy.

ERCOT With operable resources of nearly 46,000 MW and a strong bulk power transmission network to meet the area's expected peak demand of 36,800 MW, up 5.3 per cent from 1983, no major problems were anticipated.

MAAC With 1475 MW of capacity imports scheduled from ECAR over the summer and a new generating station (Brandon Shores) on-line, MAAC's anticipated summer reserve margin was 24.4 percent. Because of the cost differential between oil-fired generation in MAAC's eastern area and coal-fired generation in MAAC's western area, and availability of coal-based electricity from ECAR, MAAC is typically importing around 3000 MW daily from systems to the west.

MAIN MAIN experienced an exceptionally high summer peak last year and did not expect to face it again in 1984. With a reserve of 21.6 percent and heavy interregional transmission ties, no regional power supply problems had been encountered by mid-August.

MAPP With the 450-MW Antelope Valley coal-fired station on-line, utilities in MAPP enjoyed a reserve margin of 33.6 percent to meet its expected summer peak demand of 21,176 MW, up more than 3 percent from 1983. No real problems as of the middle of August.

NPCC U.S. members of NPCC entered the summer facing the possibility of a temporary shortfall of generation in New England, but with sufficient backup from New York and from Canadian members to meet contingencies.

SERC No capacity or transmission problems were anticipated in the light of reserve margins of about 32 percent and adequate transmission capacity.

SPP No problem with either generating or transmission capacity was encountered through mid-August.

WSCC Transmission limitations and the direction of power flow between various parts of the doughnut-shaped system severely restrict the transfer of economic non-oil and non-gas generation. However, council projections indicated generally adequate bulk power supplies. Interconnections to the east are small capacity and of little backup value in the event of an emergency of any significance.

Grand jury indicts former TMI worker

HARRISBURG, PA—James Floyd, a former supervisor of operations at Three Mile Island Unit 2, was indicted in June by a federal grand jury on four counts of making false statements, said U.S. attorney David D. Queen.

Floyd, 47, of Elizabethtown, PA, was the superior of all reactor operators at unit 2 from its start up through August 1979. He left Metropolitan Edison Company in April 1983.

The indictment charges Floyd with getting another licensed reactor operator to complete portions of a written requalification examination he was taking in 1979. Floyd then took the exam and submitted it as his own, charged the indictment.

In November 1979, Floyd applied for reissuance of his senior reactor operator license and stated that he had successfully completed the requalification program. The indictment charged Floyd with submitting false statements to the Nuclear Regulatory Commission.

Queen said that if convicted, Floyd could face five years in prison and/or a $10,000 fine on each of the counts.

Metropolitan Edison had pleaded guilty in March to one count of operating TMI-2 with an inaccurate and unreliable water inventory testing procedure. In a plea bargain struck with Queen, the utility pleaded no contest to six charges and four others were dropped. (See *EL&P* April 1984).

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Inquire R.S. 8

ing in the thousands of dollars per kilowatt—cogeneration opportunities in these regions are plums ripe for the picking. "The big motivation here," notes FERC's Liles, taking the developers' perspective, "is not in selling power back to the utilities at avoided cost, but rather using the power yourself and backing out of that expensive retail service."

"It's no accident," he added, "...that commercial establishments on Long Island are looking at cogeneration of all types because Long Island Lighting with the Shoreham plant is now facing a very large increase in retail rates.

"I think that's where the action is," Liles concluded.

Developers must be marketers

After advising a group of potential cogeneration developers to search for utility service areas that had "unfavorable economics," Darrell A. Smith, principal attorney at Putnam, Hayes & Bartlett, offered, "There are some very significant opportunities here."

Nuclear power plant rate shock, he said, can be the localized equivalent of the 1978-79 energy crisis. This will lead a lot of persons to start thinking about how *not* to deal with their local utility.

"It has long been believed that the real costs of nuclear power were decreasing, but on-going real costs of new nuclear plants are increasing," Smith said.

The San Francisco attorney, addressing potential cogeneration developers at a recent conference sponsored by the Energy Bureau, said that unlike the earlier energy crisis, which was driven by increasing fuel prices, the rate shock crisis is driven by increasing capital costs.

"This is a very significant difference," he said.

Smith, who has had, among other jobs, positions of project manager at Pacific Gas & Electric and a fuel allocation analyst at the former Federal Energy Administration, explained that the difference works to the advantage of the cogenerator at the expense of the electric company. This is so, he said, because whereas increased fuel costs have added to the cogenerator's cost, increased capital costs do not, in a relative sense.

Recalling that many forecasters foresee all types of industrial self-generation decreasing in the future, Smith urged his listeners to market their electricity by positioning themselves to meet their customers needs. While "customers" here can be those industrial companies that contract with a third party for electricity and/or thermal energy, they can also be existing or potential utility ratepayers, thereby exploiting the fact that cogenerators and small power producers can sell their electricity on the retail market.

PURPA neither authorizes nor denies retail sales, notes FERC's James Liles, for this is primarily a matter of state law. Thus, qualifying status of a facility is not jeopardized by such sales. "It's not where the power goes [that's of interest], but how it is produced," Liles said.

Electric utility impacts

While it is speculative for analysts to project cogeneration capacity to the year 2000, it is even more risky to estimate the impact of this growth on utility planning, service, and economics. Some analysts, like Liles, believe that cogeneration facilities constructed to meet the steam and electricity needs of large industrial and commercial firms could eliminate large blocks of new electric company load. In addition, to the extent a cogenerator has excess electricity to sell, the utility will have even more of its energy production requirement offset as it purchases that electricity at its avoided cost.

But Glen H. Lovin, president of the International Cogeneration Society, doesn't think electric companies have all that much to worry about here. Even given the more liberal cogeneration growth estimates of 44,000 MW by the end of the century (see box), Lovin says, "...Only 3,000 [industrial] plants with the highest potential for conversion [to cogeneration] are included in the projected potential of 44,000 MW and these plants are spread out across the United States."

Speaking recently at a roundtable discussion with the editors of *Power Engineering* magazine, he added, "If they all converted to cogeneration systems, we would not expect any great impact on the local utility companies."

Other industry observers are less sanguine, however. Writing in the most recent issue of *Energy Business*, a publication of Ebasco Services Inc., Louis J. Sas and Irving Fruchtman note that over the next 10 years, 25,000 MW of cogeneration and small power production will be added to the U.S. grid. The authors warn that unless electric utilities take marketing action this capacity will be developed by others.

"As leaders in the energy supply business, electric utilities must protect existing markets and respond to new opportunities," the Ebasco authors write. "With continued government encouragement, cogeneration and small hydropower facilities will represent 15 percent of new generating capacity because of their rapid payback and high profit margins. Utilities should form partnerships, joint ventures, or non-regulated subsidiaries and aggressively develop small energy projects to maintain their influence in the management of electric energy."

General Electric estimates that as much as 39,000 MW of cogeneration capacity could be on line by the end of the century. "This would suggest that we're looking at a major change in the method of producing electricity and steam in this country...," says John Wing, general manager of the company's cogeneration applications department.

Wing, who served as conference moderator at a GE-sponsored cogeneration meeting that was attended by more than 60 major U.S. companies last May added that "It signals a shift in the ownership and location of energy conversion facilities, with implications for, and new relationships with the utility industry that has traditionally performed the task."

But while General Electric is aggressively courting industrial firms in the hope of selling them cogeneration facilities, at least one electric utility has taken a bold step to get involved in a small power production project itself. The move is seen as having potentially critical ramifications on a larger scale for the electric utility industry.

Tucson Electric Power, through its wholly-owned subsidiary Rincon Investing Company, has come up with two-thirds of the capital necessary to construct a nominal 11 megawatt plant that will use biomass in the form of waste wood as its primary energy source. Joining in partnership with Ultrapower 3, Inc., a private company, Rincon, as an "electric utility," is restricted from owning more than 50 percent of the facility under FERC rules.

Nevertheless, Rincon will make an initial capital contribution of $5 million to the partnership, while Ultrapower 3, Inc. will make a $2.5 million contribution. The joint agreement provides that each party will have a 50 percent interest in the venture profits and losses. Management decisions are to be made by a policy committee with each partner equally represented.

What is noteworthy about this case is that FERC has concluded that the Ultrapower 3 facility meets the criteria for qualifying small power production facilities.

According to FERC rules, a cogeneration or small power production facility is considered to be owned by a person primarily engaged in the generation or sale of electric power if more than 50 percent of the equity interest in the facility is held by an electric utility.

What the commission had to decide in this case was whether the entitlement to profits, losses, and surplus determined the equity interest in the partnership, or whether such interest was set by the contribution of capital to the venture and the entitlement to the original contributions upon liquidation of the company.

Stating that the initial contribution of capital by the partners may be more properly viewed as debt than equity, and declaring further that this capital contribution conveyed no management rights nor did it influence the distribution of profits, the April 19, 1984 FERC order decided that Rincon had no more than a 50 percent equity interest in Ultrapower 3 and that, therefore, the commission's "qualified facility" ownership rules were met.

"The partners do not individually own any identifiable assets," the order reads. "There are no shares of stock outstanding. Under these circumstances we have looked to the stream of benefits from the venture to determine the equity interest of the partners."

To the extent this reasoning is applicable on a broader scale, it opens the door to fuller electric utility participation in the financing and construction of cogeneration and small power production facilities. Although FERC's James Liles allows there may now be an incentive for electric utilities to contemplate providing 100 percent of the capital cost of a new cogeneration or small power production facility, he quickly adds that the precedent in the Ultrapower 3 case is very narrow, and residual questions linger on the broader applicability of the facts of this case.

The commission itself seemed to presage this view when it wrote in the April Ultrapower 3 order, "We would be particularly concerned if the utility were to receive any special advantages as a result of the partnership, such as service contracts with favorable terms or the right to loan money to the partnership at non-commercial interest rates."

The interpretation of the Ultrapower 3 case as an end run around PURPA and FERC rules in an attempt to avoid the 50 percent utility ownership limitation has to be viewed critically. Clearly, there does not appear to be much enthusiasm these days on the part of electric companies to revoke the 50 percent ownership limitation.

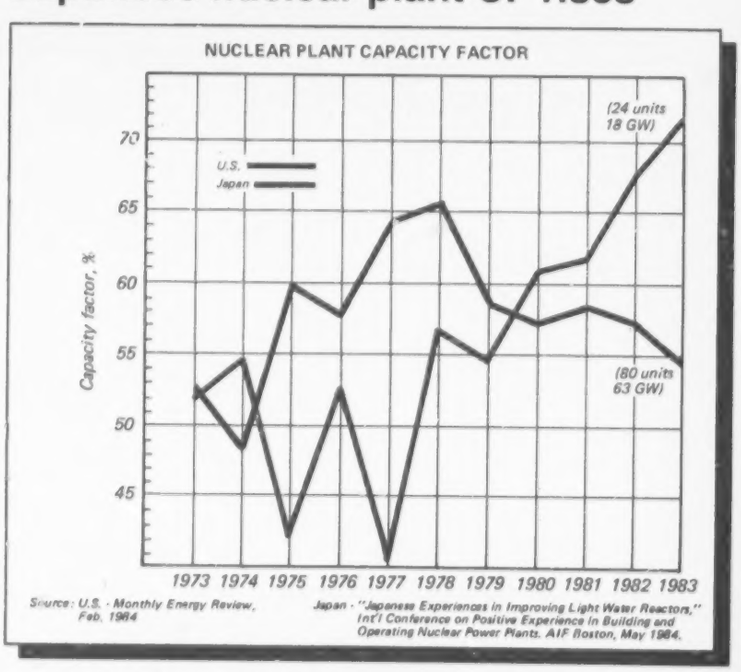
According to a legislative aide at the House Subcommittee on Energy Conservation and Power, Subcommittee Chairman Richard Ottinger earlier had made it known that he would be open to utility petitions aimed at rescinding the 50 percent ownership rule. There was, however, "not a peep [from utilities] during the whole Congress," the aide said.

It makes us conclude, he added, that either electric utilities are not very interested in this, or they have some larger plan to go after PURPA after Ottinger is gone.

Ottinger has announced he would not seek reelection this fall.

Correction

Japanese nuclear plant CF rises


NUCLEAR PLANT CAPACITY FACTOR
Capacity factor, %
70
65
60
55
50
45
U.S.
Japan
(24 units 18 GW)
(80 units 63 GW)
1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983
Source: U.S. - Monthly Energy Review, Feb. 1984
Japan - "Japanese Experiences in Improving Light Water Reactors," Int'l Conference on Positive Experience in Building and Operating Nuclear Power Plants, AIF Boston, May 1984.

The corrected graph of Japanese and U.S. nuclear plant capacity factors shows that while U.S. performance has been declining over the past 5 years Japanese plants have improved tremendously. The original graph that accompanied a feature article on capacity factor improvement efforts in the August issue of *EL&P* (page 26) omitted the line showing the impressive turnaround in Japanese nuclear plant performance.

Nuclear PACs carry clout, says Critical Mass

WASHINGTON, D.C.—Public Citizen's Critical Mass Energy Project, the Ralph Nader safe energy advocacy group, says there is a "strong correlation" between congressional voting records and the amount of money Congress members receive from nuclear political action committees (PACs).

A recent Critical Mass study found that House members who always voted for the nuclear industry's position on key issues received about four times as much money as those who consistently voted against the industry.

"During the 1981-82 and 1983-84 election cycles," said the study, "80 utilities and nuclear-involved corporations gave $3,355,410 to congressional members who, more often than not, voted for the industry's position on key legislation."

Sheila Mayberry, the study's author, picked five Senate and House nuclear-related votes in 1982 and 1983 to examine. They include: the question of further Clinch River Breeder funding; an amendment that would give states the right to refuse a high-level radioactive waste burial site; an amendment to ban the use of commercial spent fuel for the production of nuclear weapons; stricter requirements on nuclear exports; and the construction work in progress bill.

Mayberry compiled the data in the study from reports submitted to the Federal Election Commission. Under federal law, businesses, trade unions and other organizations may not contribute money directly to candidates. They are allowed to set up PACs, which may contribute up to $5,000 per candidate per election. The primary and the general elections each count separately.

Many of the utilities and corporations examined in the study, said Mayberry, have more than one PAC.

Mayberry said congressional members received contributions from 44 utility and 36 nuclear-involved corporate PACs. The utilities have investments in nuclear plants and the corporations are suppliers of goods and services to the industry.

Largest contributors

The study found that utility PACs gave $880,165 between 1981 and 1983. The largest contributors were Texas Utilities ($83,300), Consumers Power ($67,265) and Florida Power & Light ($66,200).

Nuclear-involved corporations, said the study, gave congressional members $2,475,245 during the same time frame. The largest corporate donors were General Electric ($243,100), Fluor Corporation ($212,900) and Rockwell International ($204,800).

"The nuclear industry is losing the support of the American public and the financial resources of Wall Street," said Critical Mass Director Michael Totten, so the industry appears to be offsetting this erosion of confidence with efforts to secure taxpayers' funds by investing campaign contributions in members of Congress."

House members who received more than $20,000 in nuclear PAC contributions were more than three times as likely to vote in favor of the nuclear industry's position than representatives that received no money, said Critical Mass.

While in the Senate, members who accepted more than $20,000 were more than twice as likely to vote along industry lines than senators not receiving PAC money.

Critical Mass said six of the ten largest Senate recipients sit on committees that have jurisdiction over nuclear-related legislation. The group said Sen. James McClure (R-ID), who serves as chairman of the energy and natural resources committee, received $46,000 in PAC money and voted against the nuclear industry only 20 percent of the time.

The study found that the largest concentration of industry PAC money in the House went to committee members. It said they received almost $1.5 million in contributions.

Among individual members who consistently voted for the nuclear industry's position were Sen. Bennett Johnston (D-LA), who received $56,815 in PAC money, and Sen. McClure, who accepted $46,775.

The study also pointed out that some congressional members voted against the industry's position even though they received a substantial amount of PAC money.

TOP 20 PAC CONTRIBUTIONS BY NUCLEAR UTILITIES
(1981-82 and 1983-84 Election Cycles)

Utility	Total	Utility	Total
1. Texas Utilities Co.	$83,300	11. Gulf States Utilities	$27,450
2. Consumers Power Company	67,265	12. General Public Utilities	25,530
3. Florida Power and Light	66,200	13. American Electric	23,175
4. Southern California Edison	63,700	14. Alabama Power Co.	22,960
5. Middle South Utilities	57,425	15. Virginia Electric Power Co.	22,050
6. Georgia Power Co.	38,485	16. Consolidated Edison	19,750
7. Pacific Power and Light	38,255	17. Commonwealth Edison	19,825
8. Detroit Edison	34,250	18. San Diego Gas and Electric	17,725
9. Carolina Power and Light	32,275	19. Boston Edison	17,703
10. Baltimore Gas & Electric	29,950	20. Puget Sound Power and Light	17,425
		TOTAL	$724,698

Source: Public Citizen's Critical Energy Mass Project

THE TOP TEN RECIPIENTS OF NUCLEAR PAC CONTRIBUTIONS

Top Ten Recipients in the House of Representatives

Representative	Total PAC Money Received	Percentage of Votes Against the Nuclear Industry
Gramm, P (R-TX)	$45,825	0%
Michel, H (R-IL)	33,575	20
Rostenkowski, D (D-IL)	31,300	80
Chappell, B (D-FL)	28,000	20
Fuqua, D (D-FL)	27,000	40
Fields, J (R-TX)	25,125	20
Jones, J (D-OK)	22,300	40
Smith, R (R-OR)	21,958	33
Hunter, D (R-CA)	21,390	20
Shelby, R (D-AL)	20,785	20

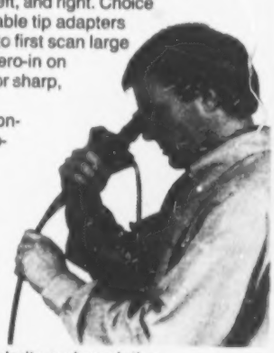
Top Ten Recipients in the Senate

Representative	Total PAC Money Received	Percentage of Votes Against the Nuclear Industry
Wilson, P (R-CA)	$82,815	50%
Johnston, J (D-LA)	56,800	20
Hatch, O (R-UT)	48,696	60
McClure, J (R-ID)	46,775	20
Bentsen, L (D-TX)	45,118	20
Tower, J (D-TX)	39,800	0
Durenberger, D (R-MN)	36,200	40
Evans, D (R-WA)	34,050	0
Warner, J (R-VA)	32,975	60
Wallop, M (R-WY)	32,750	20

Source: Public Citizen's Critical Energy Mass Project

NEW FLEXIBLE FIBERSCOPES

Inspect deep inside turbine equipment for defects on liners, nozzles, and rotor blades. Now available in lengths up to 20', new industrial fiberscopes feature fully articulated tips which move up, down, left, and right. Choice of 7 interchangeable tip adapters allow inspectors to first scan large areas and then zero-in on specific defects for sharp, close-up views. Unique remote control handle manipulates scope tip angulation for greater visual freedom. Inclusion of two light guide windows in each tip provides more even illumination of viewing area for enhanced visual clarity and resolution.



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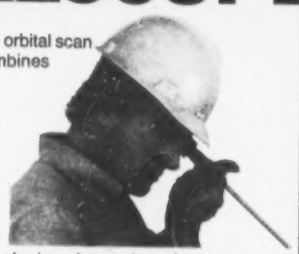
Inquire R.S. 53

NEW RIGID BORESCOPE

All-new Mark II orbital scan borescope combines unsurpassed optical quality with an exclusive rotary scan capability. Computer-designed optical system utilizes achromatic lenses for true color imaging and maximum brilliance. Unique orbital scan feature virtually eliminates need to maneuver the scope. Convenient dial-touch control located on easy-grip handle rotates probe shaft 260 degrees—simplifying internal inspections while solving light guide strain and tangling problems.
New Extenda-Scope system features variable extender lengths and interchangeable viewing heads for crystal-clear inspections up to 50' away.



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EXPLOSION-PROOF LIGHT SOURCE

All-new UL Listed AXL-100 Explosion-Proof Light Source permits extended, safe fiberscope and borescope inspection in hazardous areas without overheating. Designed to run at a constant, safe temperature for hours of uninterrupted inspection, AXL-100 uses 12-volt, 100-watt focused halogen lamp for maximum light output with minimum heat. This durably-built unit illuminates the inspection area for unsurpassed brilliance and clarity.
For the first time, internal visual inspections are now possible in areas previously considered too dangerous for use with conventional light sources.

For more information

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NOTE

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